

A New Generation of Standards: Implications for the Caribbean and Latin America

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Canadian International
Development Agency

Agence canadienne de
développement international

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The authors would like to thank Mickey Paggi for some helpful conversations during the preparation of the paper.

Inés Bustillo, Director, Raquel Artecona, Economic Affairs Officer and Rex Garcia, of the ECLAC Washington Office have overseen the preparation of the report as a whole.

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Abstract

The nature, form and context of standards in the food and agricultural sector have been changing rapidly. We are entering a new world of standards that will demand significant changes in production and marketing strategies. These developments will present challenges to most of those involved in trade in agricultural products, but they will be particularly problematic for small producers in the developing countries. The countries of the Western Hemisphere have many small producers who have, or would like to have access to the large markets of the region. This paper is primarily designed to explain the emerging system of standards in the Western Hemisphere.

Introduction

International trade in food products has expanded significantly during the past few decades. These products include fresh and processed fruits and vegetables, fish, live animals and meat, nuts, and spices. However, international trade of these products is subject to a huge array of standards and regulations imposing potentially large compliance costs to many developing country suppliers.

Standards and regulations apply to both the products themselves and the processes by which they are processed, handled, packed, etc. and respond to health concerns, consumer preferences and strategic commercial interests. Sanitary and phytosanitary measures (SPS) and other technical requirements can inhibit international trade in foodstuffs and other agro-industrial industries through varied channels. Costs of compliance could sometimes be so high as to induce loss of developing countries' comparative advantage in the production of basic foodstuffs. Exporting firms must often undergo significant structural adjustments to be able to accommodate the numerous and sometimes differing requirements of more developed countries. This is aggravated by the emergence of a growing number of private standards in addition to public standards. Given the lack of accredited laboratories and technical expertise in developing countries, suppliers face significant challenges to sell in global markets. Lack of harmonization can affect the performance of exporting firms.

The nature, form and context of standards in the food and agricultural sector have been changing rapidly. We are entering a new world of standards that will demand significant changes in production and marketing strategies. These developments will present challenges to most of those involved in trade in agricultural products, but they will be particularly problematic for small producers in the developing countries. The countries of the Western Hemisphere have many small producers who have, or would like to have access to the large markets of the region. This paper is primarily designed to explain the emerging system of standards in the Western Hemisphere.

Decisive action will need to be taken by developed countries and international organizations to avoid the development of a new set of sanitary and phytosanitary barriers to trade. These barriers are in part a function of regulatory action by governments and in part a reflection of the emergence of private standards often emphasizing processing methods. Institutions are being set up that are mandated to develop and monitor compliance to those standards. Most of these institutions operate either at the domestic or the multilateral, but regional bodies in the Americas also have an important part to play. To the extent that the mix of standards and institutions can be improved in the region, all producers will have better access to the richest markets in the world.

Several countries in the Latin American and Caribbean region have expressed their need to understand the impact of food safety standards on trade issues.

This document is part of the technical assistance activities of the Project “Strengthening Trade Related Capacities in the context of trade liberalization in the Americas”, financed by the Canadian International Development Agency (CIDA) and executed by the ECLAC Washington Office.

Preliminary results of the study on world SPS standards and principles were presented at the Fifth Annual North American Agrifood Market Integration Consortium Workshop, New Generation of NAFTA Standards, on May 21-23, 2008 in Austin, Texas.

Defining Standards

The term standards, when applied to agricultural products, has many meanings. One such meaning emphasizes quality. Even before the USDA's creation in 1915, the establishment of quality standards was an important element of U.S. agricultural policy. Product quality standards, judged by the external appearance of the products, were intended to facilitate pricing and trade in markets. The rationale was straightforward: it was recognized that prices are meaningful as signals to consumers only if they relate to products of apparent homogeneous quality. The broadest authorization for current quality grading systems is provided by the 1946 Agricultural Marketing Act, although commodities such as cotton, grain, and tobacco have their individual legislative authorizations (Breimyer; Knutson and Sporleder). These quality standards have comparatively little to do with the safety of a product for consumption purposes.

Other standards exist make sure that the consumer knows what he or she is buying. Section 401 of the Federal Food, Drug, and Cosmetic Act requires that whenever such action will promote honesty and fair dealing in the interest of consumers, regulations shall be promulgated fixing and establishing for any food, under its common or usual name so far as practicable, a reasonable definition and standard of identity, a reasonable standard of quality, and/or reasonable standards of fill-of-container. The Food and Drug Administration (FDA) also regulates standard terms used by industry in making nutrient content claims.

A third type of standard relates to safety. U.S. public policy concerns about the safety of the food supply developed late in the 19th century with the discovery of blatant cases of adulteration of the food supply.¹ The result was the enactment, in 1906, of the Meat Inspection Act and Pure Food and Drug Act. The existence of two separate U.S. laws resulted in the separation of regulatory authority between the USDA for meat and poultry inspection, through the agency of the Food Safety and Inspection Service (FSIS), and the Food and Drug Administration (FDA) for processed foods (including prepared foods).² This divided responsibility has survived to the present.

Meat and poultry health and safety inspection essentially represented an extension of the quality grading system: the USDA standard for the safety of the meat supply was based on inspectors' senses of sight, taste, and smell from 1906 through 1996 (Knutson, Penn, Flinchbaugh, and Outlaw). FDA standards, on the other hand, have placed emphasis on the content of the products, banning

¹ These were subsequently chronicled for the meat packing industry by Upton Sinclair in his 1906 book, *The Jungle*.

² The FDA is a part of the Department of Health and Human Services.

additives that were demonstrated to be harmful to health while accepting additives that were “generally recognized as safe (GRAS)” for example in food preparation and preservation. As agricultural sciences progressed, more chemicals were used in agricultural production practices, and methods for detecting chemical residues improved. Accordingly, the emphasis began to shift to the safety concerns arising from the presence of this new set of additives to the food supply.³

Additionally, concerns were raised about the impact on the environment of agricultural chemicals, and this eventually led to the creation of the Environmental Protection Agency (EPA), which treated chemical residues as additives as is the case for products of biotechnology. So EPA joined the FDA and the USDA in the development and monitoring of standards in the area of food and agricultural products.⁴

Following the terrorism events of September 11, 2001, a new objective was added to the demand for regulations relating to food safety. The vulnerability of a nation’s food system to deliberate contamination and the possible use of microbial agents to spread disease were subject to debate and speculation. Biosecurity quickly became integrated into the regulatory framework; though it has caused some tensions as a result of its potential for directly impacting trade and the transaction costs associated with trade. These potential impacts of biosecurity on trade flows have yet to be fully sorted out. At a minimum, a border security agency with broader authority has been added to the already confusing maze of regulatory bodies for food products entering a country.

Imports of food and agricultural products can be linked with animal and plant disease and with the spread of invasive species. Additional regulatory agencies protect the safety and integrity of the food supply from such incidental imports. The main responsibility for the control or eradication of plant and animal pests and diseases resides in USDA’s Animal and Plant Health Inspection Service (APHIS), although the Public Health and Biosecurity Act of 2002 transferred the border inspection function to the Department of Homeland Security (DHS). An overlap exists between such concerns and human health issues: some of the animal diseases can directly impact human health (zoonoses), which is also of interest to the Center for Disease Control (CDC). Like DFA, CDC is located in the Department of Health and Human Services (DHHS). The diversity and complexity of several government agencies located in different departments serves to emphasize the need for coordination of domestic and import regulations designed to protect both the production base and the confidence of consumers in the marketplace.

The involvement of several agencies having separate, and often overlapping, responsibilities for food safety, and for sanitary and phytosanitary (SPS) regulations generally, appears to be common for most countries of the world. The structure often involves a health ministry that has overall responsibility for protecting public health; an agriculture ministry having responsibility for phytosanitary issues, although they often also deal with a variety of trade issues, and a border protection/security agency. Often developing countries’ domestic food safety standards receive relatively little attention, with the main focus of attention being in the agriculture or trade ministry on complying with SPS standards for exports. Canada appears to be one of the few countries that has established a single Canadian Food Inspection Agency (CFIA).

Historically, food quality and food safety regulations have been implemented largely by means of product standards, involving the examination and testing of the product itself. Little regard has been given to the means of production, the conditions in the region of origin, or developments along the supply chain. The product standards method of regulation has the merit that it can be carried out either

³ Fostering this concern and policy change was the publication of Rachel Carlson’s 1962 book, *Silent Spring*, which postulated the adverse effects of certain agricultural chemicals, such as DDT, on both the environment and health.

⁴ Several other agencies are involved in food safety regulation. For example, the Customs Service, now a part of the Department of Homeland Security, is responsible for border inspection; fisheries are regulated by the National Marine Fisheries Services (NMFS), a part of the Department of Commerce; and others.

at the point of entry into the marketing chain or at the border in the case of imports. The multilateral trade system implicitly recognizes the advantages of product-based regulations, as it emphasizes the need to avoid discrimination both among suppliers and between imports and domestic production of “like products.” So for many years, product standards were seen to be the most appropriate and effective means of ensuring that imported and domestic goods were equally safe and the relative lack of information about conditions in the producing country was not an issue.

In contrast with product standards, process standards specify the steps and procedures that are to be utilized along the supply chain to minimize the occurrence of food safety problems. This alternative method of applying regulations has emerged in the past two decades. It emphasizes the method of production or processing rather than the nature of the product itself at a point in the marketing chain. In part this is a matter of convenience: from a practical perspective, it has been found that the safety and security of the food supply can often be more effectively and efficiently protected by managing or regulating the practices utilized in producing, handling, processing, or marketing agricultural products. The development of supply chains whereby retailers in developed countries contract with suppliers in other countries has both facilitated and required such information about production and handling conditions.

The growth of process standards poses some challenges to the trade system. Specifically, the classification of goods that governments adopt for the purposes of recording and taxing imports relies on the characteristics of the product and rarely differentiates by method of production. Moreover, the notion of nondiscrimination is difficult to apply when goods are differentiated by production technique.⁵ However, consumers are becoming increasingly interested in attributes that are apparently linked to the production method. So the use of process standards is on the rise, not only as a convenience for testing for health hazards but also to provide information for consumers. This inevitably involves the private sector, for which the satisfaction of consumer demands is commercially beneficial. The major changes in the set of standards that apply to agricultural and food products can be summarized as a growth in the use of process standards and the increasing involvement of the private sector in the setting of standards.

Private Standards

Private standards have always been present in the food industry but have been developing rapidly in recent years.⁶ These standards are set by the firms themselves as part of their branding strategies and quality control measures. More recently, multi-firm standards are being developed, agreed upon, and implemented through the specification of a set of good agricultural, handling, processing, or management practices. The specification of these practices is determined by the combination of quality, safety, and lifestyle objectives to be achieved. In general, the specification of standards that relate predominantly to health and safety issues are left to the public sector but, once specified, these public sector health and safety standards may be incorporated into private standards, reinforcing their operation and assisting with enforcement.

In general, the private sector desires to have as much influence and control over the setting of these standards as possible. If there is a need for government involvement, the private sector would prefer that the government act more as a facilitator in helping to set up the rules of the game and as an auditor or third party inspector than as a regulator. In addition, aggressively innovative private sector firms will seek to establish proprietary process standards that fit their domestic and global supply chains (Reardon and Flores, 2006; Lange and Reardon, 2007).

⁵ The problem in a WTO context of identifying “like products” is by no means simple: is likeness a consumer concept or one that relates to the composition or history of the product.

⁶ For example, the processing of products to the specification of buyers is not new.

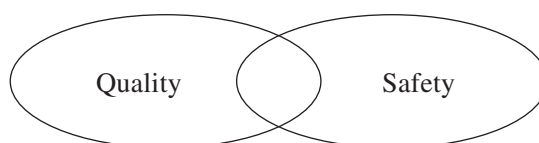
However, the distinction between public and private is becoming blurred. Public standards are often administered through trade groups. Governments sometimes give informal backing to private standards when this serves a need that would otherwise have called for public standards. So the emerging new world of standards is a mix of public and private use of both product and process standards to achieve an expanded range of objectives. There are differences of opinion over how involved governments should become in the setting of process standards and whether these standards should be public or private. Private standards are predominantly process-oriented, which can cause conflicts with government priorities. The following section attempts to clarify the distinction between public and private standards by looking at the basic choices that confront the public regulator or the trade group establishing a private standard.

Overlapping Standards

Public regulation, as discussed above, centers on quality and safety. The regulatory use of product standards is related to these two main objectives (Figure 1):

- A quality component serves as marketing aids to product price discovery, to trading, to price reporting, and as an aid to avoiding consumer deception and to promoting rational consumer decisions. In the United States these product quality standards, whether they are grade standards; identity, quality, and fill standards; or ingredient and nutrition labeling standards, and are generally provided by regulators as a public good. Private firms use their own product quality standards as needed to maintain or enhance brand reputation. Laws exist to protect usurpation of such brand reputations.
- A safety component, based on product content, is designed to protect the safety and security of the food supply. Content in this context includes the presence of pathogens harmful to the health of plants or animals and traces of (not the use of) additives injurious to the health of humans.
- In addition to having quality components, some food content standards may also have safety components for certain consumer dietary needs, including ingredient labeling that requires that processed foods indicate the ingredients contained in the product. In some cases the appearance of a product in terms of blemishes, color, feel, smell, or content may be indicators of the safety of the product and its fitness for consumption as well as criteria for grading.⁷ The area of overlap shown in Figure 1 between the product quality and safety objectives represents the fact that there can be a significant dual purpose to public regulations.

FIGURE 1
VISUAL REPRESENTATION OF OVERLAPPING OBJECTIVES
OF PRODUCT STANDARDS



Source: Prepared by the author

⁷ It is important to note that product standards, whether relating to quality or safety, are generally only tested on product samples, and there is substantial debate over the level of sampling and tolerance that is acceptable to the public. In the case of safety, zero tolerance for certain pathogens is becoming more common. The setting of parameters for sampling and tolerance has made risk analysis a prerequisite to the setting of standards.

The rise in the use of process standards, by both public and private bodies, has a number of causes. From a health and safety perspective, the leadership for developing process-based standards was provided by the processed foods industry. The need to control food-borne illnesses in the low-acid canned food industry caused this industry to aggressively pursue the development of such standards.⁸ Out of these initiatives grew the now widely used Hazard Analysis Critical Control Point (HACCP) science-based approach to assuring a safer food supply. Initially adopted by the FDA nearly 30 years ago, it was mandated in 1997 to be used by the USDA's Food Safety Inspection Service (FSIS) in slaughtering plants (FDA Backgrounder).

The HACCP risk assessment approach to food safety provides a good example of a process standard. A typical HACCP regime for food safety involves the following seven process-based and science-based steps (FDA Backgrounder):

- Analyze the potential food safety hazards.
- Identify critical control points at which the potential hazard can be controlled or eliminated.
- Establish preventive measures with critical limits for each control point.
- Establish procedures to monitor the critical control points.
- Establish corrective actions to be taken when monitoring shows that a critical limit has not been met.
- Establish procedures to verify that the system is working properly.
- Establish an effective recordkeeping to document the HACCP system.

The last of these steps emphasizes a further benefit of a process approach. The ability to trace a hazard to its origin is becoming an important requirement for ensuring the safety and security of the food supply in plant and animal products. Moreover, it satisfies to some degree the need to apportion liability in cases where products cause damage or health problems. Thus the HACCP system is now fully entrenched in both the public and private sectors as a convenient way to ensure product safety. This comprehensive approach to biosafety has been widely adopted in other countries, leading to a significant improvement of the level of information about the origin of products and the corresponding increase in the reliability of overseas testing and certification processes.

The most important driver of the switch to process standards has been the consumer. There is a growing interest among many consumers in the origin and method of production of the food that they buy. In order to match this demand to enhance the retail acceptability of the food supply, standards are being developed that extend far beyond efforts to assure biosafety and biosecurity. These new and often controversial demands relate to societal expectations regarding how food should be produced, which may or may not be related to product quality and safety and may be more a matter of perception than of science. These demands can be thought of as “lifestyle” demands, expectations, or objectives. These diverse demands add an additional circle in Figure 2 (relative to Figure 1), which encompasses this broader set of societal objectives (or at least those of the advocacy groups articulating such objectives) such as those involving animal welfare, fair-trading, local sourcing, organic farming, and the avoidance of genetically modified organisms (GMO).

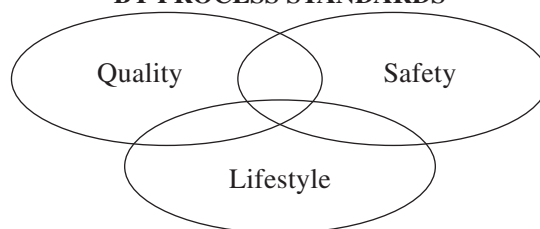
It is becoming increasingly common for governments to be given responsibility for assuring that lifestyle standards are met through standards setting, inspection, and audit procedures. Other standards that enable one to pursue lifestyle choices, such as animal welfare regulations, may barely

⁸ One of the incentives came from the need to assure a safe food supply for the NASA astronauts. Low-acid canned foods are particularly subject to biocontamination such as botulism, and the need to have a safety food supply for astronauts in space travel was a high priority because of the lack of ready access to medical care.

touch on issues of quality or safety. Lifestyle demands are typically perception-based, rather than being science-based.⁹ As a result, they have increasingly become the subject of considerable private-sector advertising and promotion supporting these perceptions and their development. Consumers expressing these lifestyle choices through the market tend to be more affluent, reinforcing the advantage of labeling and product differentiation that emphasizes the desirability of these products.

Of course, there are many potentially overlapping issues, as illustrated by Figure 2. Some lifestyle standards (the certification of organic foods, for instance) may be useful in signaling both quality and safety attributes, though this is the source of considerable contention. Consumers may demand standards that are both quality and lifestyle related but have little to do with safety, such as wines or cheeses from particular regions. Standards may attempt to signal safety and lifestyle choices but not quality in the grading sense: regulating the imports of GM foods would seem to fall into this category for those countries that have such regulations.

FIGURE 2
VISUAL REPRESENTATION OF THE OBJECTIVES TO BE ACHIEVED
BY PROCESS STANDARDS



Source: Prepared by the author

International Standards

Both product and process standards are being used widely, and by both the public and the private sector. Much of the agricultural and food output of the Americas crosses administrative and regulatory borders. Trade costs increase if regulations clash or if there is duplication in testing. Many different levels of cooperation and competition are developing within and between the private and public sectors in the region to define workable procedures for keeping transaction costs down. This section discusses briefly some of the most significant sets of private standards and the public standards that have emerged at the international level.

Public sector standards

Public sector standards are established by a legal process at the state, federal, or international levels. They may be voluntary (recommended) practices or mandatory (required) practices. Issues of food safety and plant or animal disease prevention and control are more likely to involve mandatory standards. But mandatory standards are difficult to translate to the multilateral level, as individual regulatory authorities are reluctant to give up their own autonomy. However, national autonomy can lead to the use of regulations and standards as barriers to trade. This reality led to a number of international food, plant, and animal protection organizations becoming involved in ensuring that the content of process standards has a base in science.

⁹ This has important implications for the resolution of SPS trade disputes arising in WTO, as will be discussed subsequently.

In 1995 the establishment of the World Trade Organization (WTO) strengthened international rules designed to discipline the regulatory measures that countries adopt to achieve legitimate food safety and food quality goals. These rules oblige all WTO members to adhere to certain criteria in formulating their domestic and trade regulations. In doing so, they promote coherence both among domestic policies and between such policies and international standards. In the case of food safety, the Agreement on Sanitary and Phytosanitary Measures (SPS Agreement) required governments to apply such measures “only to the extent necessary to protect human, animal, or plant life or health,” to base them “on scientific principles”, and not to maintain them “without sufficient scientific evidence.”¹⁰ In addition, measures should be formulated to achieve their objectives in the least trade-distorting manner. In the case of quality goals, the Agreement on Technical Barriers to Trade (TBT Agreement) requires that such measures be appropriate to the objective of the regulation and also be the least trade-distorting. These new disciplines were backed up by the dispute settlement process of the WTO (Josling, Roberts and Orden).

The justifications for regulatory coordination among countries and international oversight of national regulation stem from both the public goods aspects of disease and pest control and the opportunities to reduce market transactions costs for firms and consumers. By striving for more coherent decision-making among themselves, countries can influence the conditions under which international trade is conducted and thereby address trade-related risks, improve product information, and foster welfare-enhancing transactions.

Process standards are more difficult to implement internationally than product standards because they involve complex verification, audit, and enforcement procedures by private firms or regulatory institutions in two or more countries. Trade problems can arise from lack of trust in the regulatory processes across borders, inadequate public-sector enforcement capacity in some countries, and differences in accountability imposed on domestic and foreign products. Firms in developing countries are likely to have difficulty meeting food regulatory and traceability requirements imposed by the process standards of developed countries. Yet disagreements over process standards also arise between high-income countries with high regulatory standards and enforcement capacity (Josling, Roberts and Orden).

Concerns with public enforcement of process standards could become even more prevalent in the future. The level of government at which initiative is taken, depends on the geographic scope and severity of the problem. For example, BSE (mad cow disease) in the Western Hemisphere rapidly transitioned from a European to a Canadian problem and then to a bi-national problem including the United States (Caswell and Sparling, 2005; Sparling and Caswell, 2006). In reality, BSE, like most other animal and plant diseases, has the potential for being global in scope. Hence the need exists for a sophisticated and reliable framework at the multilateral level to underpin national and regional safety standards.

Multilateral standard-setting organizations are important, not only from the perspective of assuring a safe and secure food supply, but also in reducing the potential for process standards becoming barriers to trade. The relevant international standard-setting organizations in the food and agricultural sector include:

- **Codex Alimentarius Commission (CODEX).** CODEX develops internationally recommended food standards for protecting health of the consumers, ensures fair trade practices in the food trade, and promotes coordination of all food standards work undertaken by international governmental and nongovernmental organizations. These standards are designed to create greater uniformity in product safety, grading, labeling,

¹⁰ WTO SPS Agreement, Article 2:2. There is a partial exception to the “scientific evidence” requirement in the case of temporary measures where such evidence is not available (Article 5:7).

packaging, and content, thereby avoiding sanitary and phytosanitary (SPS) as well as technical barriers to trade (TBT). CODEX is one of the main international groups establishing process standards affecting the safety of food products; although the other organizations also play an important role in each of their areas of specialization. The food safety activities of CODEX have resulted in increased efforts to coordinate its standard-setting process with OIE (CODEX, 2007 and OIEa, 2007).

CODEX took the lead in the recommendation of HACCP for adoption by each of the following of the international standard setting organizations. It is increasingly being recommended in farm-to-table biological control systems extending from farm production through retail food outlets including retailers, delis, fast-food operators, and restaurants. Its expansion for farm-to-table use throughout NAFTA would be a major step forward in not only reducing food-borne illness, but it would also be an important common policy instrument that would serve as a major step in the direction of compatibility, if not harmonization, of SPS regulations to reduce barriers to trade.

- **World Organization for Animal Health/Office International des Epizooties (OIE).** The OIE is responsible for safeguarding world trade in live animals and animal products by publishing health standards, based on veterinary science. The main activity of OIE is the maintenance of terrestrial and aquatic animal health codes. The aim of the key *Terrestrial Animal Health Code* is to assure the sanitary safety of international trade in terrestrial animals and their products. This is achieved through the detailing of health measures to be used by the veterinary authorities of importing and exporting countries to avoid the transfer of agents pathogenic for animals or humans, while avoiding unjustified sanitary barriers (OIEa, 2008). A key issue in determining the urgency of control measures is whether the animal disease is transmittable to humans, referred to as zoonoses, either from live animals or from animal products. Hazard Analysis Critical Control Point (HACCP) is a highly recommended process standard recommended by OIE for preventing food borne illnesses.
- **International Plant Protection Convention (IPPC).** The IPPC prevents the spread and introduction of pests of plants and plant products by promoting appropriate phytosanitary measures for their control. IPC establishes International Standards for Phytosanitary Measures (ISPMs) that are designed to control the spread of plant diseases and pests while maintaining channels of trade that are as open as is feasible. Most plant diseases and pests do not threaten either humans or animals, although they have the potential for adversely affecting food and fiber production, which has implications for food and fiber availability and cost (IPPC, 2008). In addition, instances of biological contamination of fruits and vegetables, such as spinach, cantaloupe, raspberries, and strawberries, have led IPPC to giving greater attention to the application of control measures, such as HACCP, and to working with CODEX and OIE in their adoption.
- **International Standards Organization (ISO).** The ISO is the principal global player in the establishment of guidelines for the establishment of private sector standards. With a membership of national standards institutes and private standards bodies from 157 countries, it aims to bridge the gap between the private and the public sector. The ISO seeks to promote a “free and fair global trading system” by providing the management- control underpinnings for quality, technical, procedural, safety, management, and environmental process standards. The primary beneficiaries are supposed to be consumers, workers, businesses, and the general public. However, one assumes that governments also derive some benefit from the ISO’s establishment of private sector guidelines in standards setting.

The ISO standards are designed to be consistent with and to facilitate compliance with multilateral rules in the SPS and TBT agreements within the WTO. But in contrast to

the multilateral standard-setting bodies the ISO has no special mention in relation to the WTO SPS provisions. However, with widespread acceptance of ISO quality management standards and the increased importance of environmental regulations in international agrifood trade, the ISO has become an important part of the global standards environment and may need more explicit recognition by regulators.

For food industries, the key ISO standards are contained in ISO 9000, which has become an international reference for meeting generic quality management requirements in business-to-business dealings. This includes achieving increased uniformity in meeting the customer's quality requirements, in meeting applicable regulatory requirements, in enhancing customer satisfaction, in ensuring food safety, and in achieving continual improvement of its performance in pursuit of these objectives. In addition, ISO 14000 is designed to assist businesses in meeting their environmental challenges, while not restraining trade. Traceability in the feed and food chain is the subject of ISO 22005. Specific attention is given in the ISO to establishing uniform international standards designed to minimize harmful effects on the environment caused by business activities, and to achieving continual improvement of environmental performance (ISO, 2007).

Many of the private standards are built around the concept of good practices (and some around best practices). The codes of good practice are specific to the product in question. Most are HACCP based, and can provide a framework for management practices in agriculture and the food industry. The fact that these good practice standards are HACCP based indicates the close and intermeshed relationship between public and private standards. Among those related to the issue of biosafety are the following:

- **Good agricultural practices (GAP)** indicate the practices that are to be followed by farmers/growers in producing agricultural products. Such practices can relate to the inputs (such as chemicals or fertilizer) utilized in production, water utilized for irrigation, control of runoff from adjoining fields/property, and the availability of hygienic facilities to farm workers in production processes up to harvest.
- **Good handling practices (GHP)** indicate the practices that are to be followed in harvesting products and in post harvest for products that are not processed (such as fresh fruits and vegetables). These include the availability of hygienic facilities to farm workers in harvesting or handling products, the utilization of sanitary practices, the quality of water utilized to cleanse products, any chemicals and heat treatment utilized in handling or treating fresh products, the composition of packing/packaging containers, and transportation of products from the farm to retailer. It also includes provisions for being able to trace the origins of the products back to specific or at least areas of production farms.
- **Good processing practices (GPP)** indicate the practices that are to be followed in processing. As noted previously, HACCP has been widely applied as the process standard for products that are changed materially in form. However, the scope of what constitutes processing is expanding as, for example, fresh fruit and vegetable products are placed in ready-to-use packages. In addition to the processed products for which HACCP process standards exist (low acid canned foods, juice, seafood, meat, and poultry), there are issues of requirements for broader application to all processed products, including requirements for traceability.
- **Good management practices (GMP)** relate to the responsibilities placed on management to see that control systems are in place to assure that products are safe and secure. The use of the GMP terminology appears to be more common when applied to the total business operation and to biosecurity issues.

Though individual producers and processors can use these good practices, their main attraction comes when buyers demand these as a way to ensure quality and safety as well as other attributes. These become collective standards promoted by the private sector. Among the more recent developments in collective standards for the food and agricultural sector are the development of specific management codes promoted usually by buyers such as supermarket chains, to increase the reliability of supplies from producers and processors. Perhaps the most successful has been the development of GlobalGAP, a private sector body that sets voluntary standards for the certification of agricultural products around the globe.

GlobalGAP emerged from EurepGAP, which was set up in 1997 by a group of retailers in Europe in cooperation with some producers. The focus EurepGAP (now Global GAP) has been on “pre-farm-gate” standards, and with the cooperation of independent certification bodies in various countries. Widespread use of the HACCP approach and a strong presence in fruit and vegetable markets had the effect of opening up markets in Europe to those producers in other countries that are able to comply with the standards. Producers must comply with the all farm crops, livestock and/or aquaculture including fruit and vegetables, combinable crops, green coffee, tea, flower and ornamentals, cattle and sheep, dairy, pigs, poultry, and/or salmon (EurepGAP). EurepGAP provided initial leadership among EU food retailers for a wide range of food safety and lifestyle standards.

In 2007, EurepGAP changed its name to GlobalGAP in 2007 has reflected the increasing geographical spread of this standard setting body to chains such as WalMart and McDonalds. “The GLOBALGAP standard is primarily designed to reassure consumers about how food is produced on the farm by minimizing detrimental environmental impacts of farming operations, reducing the use of chemical inputs and ensuring a responsible approach to worker health and safety as well as animal welfare.” (http://www.globalgap.org/cms/front_content.php?idart=3&idcat=9&lang=1). Accordingly, GlobalGAP carries the same food safety, and lifestyle standard-setting orientation as its EurepGAP predecessor.

The goal of GlobalGAP is that all supplying businesses meet these process standards regardless of their country of origin. Using this reasoning, GlobalGAP could inevitably tend to conform to the requirements of the country or bloc of countries having the highest level of food quality and safety regulation, on the assumption that it would meet the requirements of each of the other countries. This potential outcome is a contentious issue with important trade consequences. For example, a GlobalGAP standard specifying zero tolerance for GMOs would directly conflict with the WTO’s SPS rulings and could be a substantial barrier to technological progress, just like banning cloning could be a barrier to the development of medical science.

While the emphasis of GlobalGAP is on farming operations it is inevitable that its standards expand beyond GAP into the arenas of GHP (involving harvesting and handling) GPP (involving packaging products such as prepared salads), and GMP (involving managements oversight of these operations). This is consistent with the need for food retailers (including fast-food operators and restaurant chains) to get control of the safety and lifestyle production conditions of products as they move through their supply chains. As a consequence of expanding the GlobalGAP concept, they are taking steps to fulfill their legal obligations and protect the value of their tangible and intangible assets. Not surprisingly, the emphasis of GlobalGAP is on operations leading up to the retailer-members and do not extend to the protection of consumer interests in their individual operations such as the employment of HACCP-type procedures within their warehouses and retail outlets.

Among the other private sector initiatives is one organized by the U.S. Food Marketing Institute (FMI). The Safe Quality Food (SQF) Institute is a certification program and a management system that covers both primary producers (SQF 1000) and processors (SQF 2000). Again, a HACCP approach utilized for food suppliers whereby process standards dominate the certification process. As with other private standards systems, these standards are developed to mesh with those of the international organizations, as well as with the standards of countries in which they are marketing.

Searching for the Right Mix

National food markets are highly integrated through global trade and investment. The WTO SPS Agreement provides the basis for a multilateral framework for achieving coherence and complementarities among national food safety standards. The Technical Barriers to Trade (TBT) agreement likewise encourages transparency and promotes coordination of national regulations and standards through adoption of international norms. The focus in both the SPS Agreement and the TBT Agreement is on the importer. The rules encourage fair and equitable treatment of imports. But greater reliance on process standards places more responsibility on the regulatory infrastructure of the exporting country than on border inspection in the importing country. The result is particularly challenging to developing countries lacking the infrastructure. This trend in quality regulation in the country of origin is leading to increased use of private, third-party certification services in the food sector, especially within countries lacking satisfactory public certification infrastructure. These and other alternative certification options should be embraced by regulators as “one manifestation of a broader commitment by national food quality regulators to open and contestable markets that genuinely serve consumer interests” (Josling, Roberts, and Orden, 2008).

International private-sector standards promulgated by multinational private supply chains by, as described above, are increasingly important in determining food market access (Hensen). Yet nations remain the principal authority in almost all dimensions of their food regulation and standards. So the nature of the public-private relationship is crucial to the effectiveness of regulations. However, the public and the private sector have very different motivations in their standard setting. The minimization of risk for consumers (and the related costs of litigation), is shared by the public and private sectors. The public sector has little or no role in increasing product demand and or in the market share for particular firms. In a word, the primary public sector role is in food safety, although lifestyle attributes are becoming more important and controversial thorns in regulators zones of responsibilities.

It has been argued that domestic food regulations are the most appropriate instrument for risk-related (food safety) goals. By contrast, measures undertaken voluntarily by the private sector—albeit with varying and sometimes significant degrees of government involvement, including prosecution of deceptive claims—is the preferred approach for food quality goals (Josling, Roberts and Orden, 2008). The global food system is best served when domestic regulations are used predominantly for risk reduction and only sparingly to *govern* food quality.¹¹ The governance of food quality and lifestyle attributes is more diffuse than that for risk because a greater proportion of food quality and lifestyle attributes are both established and enforced by the private sector, which is as it should be. It is the market, rather than the government, that is likely to be the more agile institution for accommodating a wide range of continually evolving consumer preferences. Moreover, greater government involvement in lifestyle regulation, runs a risk of eroding freer trade objectives and institutions.

Several summary issues remain under consideration in the process of achieving the optimal mix between public and private standards. Most of these arise from the growth of process standards. Among these issues are:

- What is the appropriate use of HACCP approaches in the food supply chain? HACCP or HACCP-type procedures should be applied at all levels of the value chain. As indicated previously, the design of GAPs usually involves HACCP or HACCP-type procedures. To effectively implement HACCP is often expensive. Developing countries need to consider how these procedures can be expanded to apply to an increased share of domestic market

¹¹ The term “govern” is as it relates to food quality and lifestyle attributes is perhaps controversial. In this context it is not meant to exclude government actions that reduce transaction costs by facilitating greater uniformity in terms of trade, reducing unfair or disruptive trade practices, and aiding in price discovery.

sales in addition to export market sales. This could lower the cost of achieving the standards demanded by export markets.

- How should the traceback provisions necessary for quality control and liability issues be linked with promotional activities highlighting the method and location of production? To ensure food safety, effective process standards demand increased requirements for traceability. The requirement to be able to trade “one step forward and one step back” in the market chain, as specified in the U.S. biosecurity, law may be inadequate to satisfy food safety and phytosanitary demands. While traceback procedures are widely applicable for SPS reasons, there is a question of how much information consumers can effectively utilize on the life history of a complex product?
- How should one avoid the danger that process standards will become significant barriers to trade in violation of WTO? There is still a preference within the WTO system for product standards, but this is being modified as the reality of process standards is more evident. Process standards place increased burden on the ability of regulators to determine which aspects are science based versus those aspects that may constitute unnecessary barriers to trade.¹² The overriding issue involves what constitutes a science-based standard, which relates specifically to food safety issues? However, this begs the important issue of how to treat lifestyle standards when the issue of food safety is at best tangential and they are adopted by the private sector as a GlobalGAP standard that becomes virtually universal and, therefore, can become a substantial barrier to trade.
- How can the roles of the private and public sector in implementing process standards be made more complementary? Do market participants and consumers have enough confidence in private standards to allow public standards to concentrate on public health and safety issues? This is partly a transparency issue, but it also raises the question of the burden placed on developing countries.

¹² Discussion in the WTO SPS Committee continues on the question of whether private standards are by implication constrained to be “risk-based.” If they are then many would not meet the grade: if not, then their spread poses a threat to the progress made in the SPS Agreement to prevent trade disruption through unsubstantiated health and safety regulations. This only applies to those standards that are linked to food safety and animal and plant health.

Implications for Developing Countries

One of the primary public policy concerns with the burgeoning development of process standards is that unless proper steps are taken producers in developing countries will be placed at a substantial disadvantage relative to those in developed countries. While this is a general problem that applies to all developing countries, the developing countries in the western hemisphere are in a particular situation. Because of the importance of the United States as a market for western hemisphere produce, these are the countries that are likely to be most directly affected by process standards developments in the United States, and over which its policymakers are likely to have the greatest influence. But many of the countries of the region also have large markets in Europe. Conformity with the EU's standards, both public and private, is necessary to expand such sales. The United States and the EU have different regulatory priorities and processes. It may be costly for producers to target both markets. So until the regulations are reasonably consistent in the major markets, developing countries will have the unenviable task of choosing which standards to adopt.

There are good reasons to believe that the quality and safety regulations of the major markets are not neutral with respect to scale of operation. Paggi (2007) notes that leafy green process standards have had a comparatively larger impact on smaller leafy green vegetable producers located in the California because of the high costs associated with compliance. These costs include the costs of third party certification and audit procedures, but they also include the quality of water, the availability of hygiene facilities, and the ability to obtain training. The magnitude of these costs is largely anecdotal (Paggi, 2007). Many of these costs are fixed, meaning that unless a small producer association is involved they fall heavily on individual producers. In addition, large-scale producers can more readily adapt their production systems to process standards. For these reasons and others, research by Avendaño and Narrod. (2007) indicates that small farmers drop out of value supply chains unless special efforts are made to retain their competitiveness in the new generation of standards (see also Cervantes–Godoy et al (2007).

Cost disadvantage is not the only problem faced by small farmers. In a study of the impacts of the application of process standards to cantaloupe producers in Mexico, Avendaño and Narrod (2007) found that small farmers were particularly adversely affected (see Cervantes–Godoy et al.). According to Avendaño, organization of growers is a critical factor in whether they can overcome food safety problems and maintain their market access. She found that cantaloupe growers did not take immediate and unified action against food safety problems. After the United States closed its borders

to Mexican cantaloupe, only large growers could afford to pursue certification for the export market. On the other hand, Mexican green onion growers, who were generally larger farms and geographically concentrated, took immediate action to resolve their food safety problems. Avendaño concluded that government has an important role to play by role for strengthening grower organizations in Mexico to assist small producers in accessing supply chains.

The problem is not only one of cost of certification; it is also one of education. While it is relatively easy for a retailer to work directly or through a broker with large producers, the burden appears to increase geometrically as one moves from developed country supply chains involving larger-scale producers to less developed country supply chains involving many small farmers. Producers are often not well organized. In addition, there seldom is any public agency having either the responsibility or the resources to deliver education/demonstration programs needed to integrate smaller producers into supply chains. This is a basic deficiency that will need to be overcome or the price will be a lack of export market access. To the extent that process standards are biased against small producers, both the retailers that promote process standards and the public sector have the responsibility to take measures to assure that actions are taken to level the playing field among producers having different scales of operations.

For developing countries, several important questions and needed actions arise from these findings, conclusions and observations:

- Is the spread of process standards biased against developing country exporters? Much like the situation for small farmers, the degree of bias will depend on the progressiveness of the exporters. Process standards give some of developing exporters a significant market access edge over competitors unable or unwilling to be subject to these exacting standards. Small producer exporters are more likely to be adversely affected because they are unable to comply with the specified standards.
- What actions can the private sector take to neutralize the adverse potential impacts of their process standards on developing countries? Training by organizations such as GlobalGAP and the SQF Institute clearly emphasize the training of certifying agencies. As a results, training of producers is left up to the the supplier/exporter. For supplier/exporters it is easier and less costly to train a small number of large producers than a large number of small producers (Paggi, 2008; Cervantes–Godoy et al., 2007; and Avendaño and Narrod, 2007. While producer organizations exist in some areas, they often are dominated by larger producers, with education/compliance services for small producers being less effective Avendaño and Narrod. (2007). While education is critically important, programs that make credit more readily available, share profits, build equity and reward quality are needed.
- What actions can the public sector take to reduce the impacts of process standards on developing countries? The overriding need is in four areas: First, and most important, the most effective programs involve public-private partnerships (Figure 3). In other words, joint public-private planning and priority setting is essential. Second, small farmer organization assistance is essential. These capacity building programs include educations programs, (which may need to be very basic), credit programs (including farmers credit and organization credit), and leadership programs. Third, public assistance must be provided to build infrastructure. One of the most basic needs is to provide irrigation and sanitation systems that assure the use of clean water in irrigation, harvesting, and processing. Generally overlooked is infrastructure that eases the inspection time involved in crossing borders. On the horizon is a requirement for traceability systems that track the origin of products from the farm production unit to export markets. Fourth, countries that are members of blocs must work together to harmonize standards and inspection systems. Public programs are often more effective and efficient if coordinated across

smaller countries having common interests. In this regard, the focus should be on private and public sector interaction and coordination, as well as making full use of multilateral organizations (ISO, CODEX, OIE, IPPC) to promote international harmonization, equivalence and regionalization. This will help to reduce the threats and risks of being denied access as a result of standards that deviate from international norms.

Implications for Caribbean and Latin American Countries

The Latin American and Caribbean region is well endowed with collaborative bodies in the agricultural and health fields. In part as a result of the experience built up through regional integration bodies, governments have established ways in which they can cooperate in health and safety matters as well as in agronomic and biological research. However, these existing bodies are not in themselves adequate to deal with the new world of standards in which farmers and processors find themselves. National regulations and regulatory agencies have still not fully internalized the regional model and realized the benefits that can come from this more intensive cooperation. As a result, barriers to trade often are still prevalent within blocks.

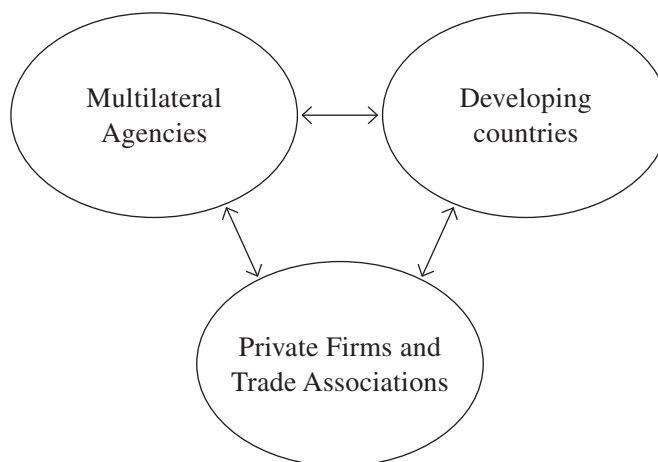
Much of the problem can be traced to the diverse size and stage of economic development of the countries in the region. On the one hand, the United States is the dominant market and the most advanced in terms of economic and technical capacity. At the other extreme, countries such as Haiti have little capacity and few resources to implement advanced procedures for bio-safety and quality control. Accordingly, any common rules and procedures are likely to be uncommonly applied. And any common institutions will have the difficulty of applying standards over disparate countries.

The alternative may be a two-level strategy for the region. At one level one could establish sub-regional institutions based on the economic blocs that already exist, in particular NAFTA, CAFTA-DR, MERCOSUR, Andean Community and CARICOM. At this level there could be effective public-private coordination, outreach/education activities, training and inspection, and in many cases the adoption of common standards. But there needs to be another level of coordination among these groups, perhaps tied in to any renewed activity in forging a free trade area for the Americas. But it would not be necessary to wait until the trade talks resume.

Would such a regional approach detract from multilateral coordination of standards? There is no reason why there should be any significant conflict. Policies at the multilateral level could still be developed, but the regional activities could prove a useful pre-cursor. And even multilateral schemes have to be administered and monitored, and that could be through regional institutions. Moreover, an initiative in the Americas could be a useful counterweight to the development of European standards that have a tendency to be built in to trade agreements between the EU and other countries. The problem of choosing between adhering to EU standards (and the standards of

EU firms) and those of the United States is particularly acute in the Caribbean, but applies to all developing countries in the region. Some coordination and enhanced bargaining power could make this dilemma less problematic.

FIGURE 3
INTERACTION OF PRIVATE AND PUBLIC SECTOR
IN FORMING DEVELOPING COUNTRY PROCESS STANDARDS



Source: Prepared by the author

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